

CLAIMS

1. A display device having a plurality of pixels arrayed so as to form a matrix-like pattern, wherein
5 the display device comprises
a light-emitting element that is formed in each pixel,
a drive thin-film transistor that is formed in each pixel and that feeds a current to the light-emitting element to make the light-emitting element emit light, and
a control thin-film transistor that controls operation of the drive thin-film
10 transistor, and
the drive thin-film transistor and the control thin-film transistor have a semiconductor layer formed of amorphous silicon.
2. A display device as claimed in claim 1, wherein
15 the light-emitting element is formed in a longitudinally oblong shape, and
the drive thin-film transistor is formed in a laterally oblong shape and is arranged with a length direction thereof perpendicular to a length direction of the light-emitting element.
3. A display device as claimed in claim 1, wherein
20 the light-emitting element is formed in a longitudinally oblong shape,
the drive thin-film transistor is formed in a laterally oblong shape,
a gate signal line and a source signal line connecting to the control thin-film transistor are arranged so as to form a grid-like pattern,
the light-emitting element is arranged with a length direction thereof parallel to the

source signal line, and

the drive thin-film transistor is arranged with a length direction thereof parallel to the gate signal line.

5 4. A display device as claimed in claim 3, wherein

the drive thin-film transistor has a channel region formed in an elongate shape and is arranged with a length direction of the channel region thereof parallel to the gate signal line.

10 5. A display device as claimed in claim 1, wherein,
of a source electrode and a drain electrode of the drive thin-film transistor, one is formed in a rectilinear shape and the other is formed in a shape surrounding the one.

15 6. A display device as claimed in claim 1, wherein
the drive thin-film transistor has a U-shaped source electrode and a drain electrode located between two fork-like portions of the U-shaped source electrode.

20 7. A display device as claimed in claim 1, wherein
for each row of the matrix-like pattern are formed
a gate signal line that is connected to gate electrodes of all control thin-film transistors in pixels located in the row, and
a power feed line from which a current is fed via drive thin-film transistors to the light-emitting elements in the row,
for each column of the matrix-like pattern is formed
a source signal line that is connected to source electrodes of all control thin-

film transistors in pixels located in the column and that crosses the gate signal line, and

within each area surrounded by gate signal lines and source signal lines, the light-emitting element, the drive thin-film transistor, the power feed line, and the control thin-film transistor are arranged in this order along the source signal line as seen in a plan view.

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8. A display device as claimed in claim 7, wherein

between the drive thin-film transistor and the control thin-film transistor is formed a holding capacitor of which one electrode is shared as the power feed line and of which the other electrode is formed by an auxiliary electrode that connects to the drain electrode of the control thin-film transistor, and

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the auxiliary electrode is electrically connected to the gate electrode of the drive thin-film transistor.

9. A display device as claimed in claim 7, wherein

the display device comprises light-emitting elements that emit light of different colors, a plurality of power feed lines are formed so as to correspond to light of the different colors,

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the plurality of power feed lines are arranged between the drive thin-film transistor and the control thin-film transistor, and

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the light-emitting elements are fed with a current from the corresponding power feed lines.

10. A display device as claimed in claim 7, wherein

the gate signal line is used as the gate electrode of the control thin-film transistor, and

the control thin-film transistor is formed above the gate signal line.

11. A display device as claimed in claim 1, wherein

a bank layer is arranged around the light-emitting element,

5 the bank layer is formed so as to overlap the drive thin-film transistor,

a cut is formed in the bank layer between the light-emitting element and the drive thin-film transistor, and

a light-shielding film is formed on the bank layer at least in a portion thereof near the cut.

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12. A display device as claimed in claim 1, wherein

a bank layer is arranged around the light-emitting element,

the bank layer is formed so as to overlap the control thin-film transistor,

a cut is formed in the bank layer between the light-emitting element and the control

15 thin-film transistor formed in a next pixel, and

a light-shielding film is formed on the bank layer at least in a portion thereof near the cut.

13. A display device as claimed in claim 1, wherein

20 a bank layer is formed so as to cover the drive thin-film transistor and the control thin-film transistor,

the bank layer has edges thereof located between the drive and control thin-film transistors and the light-emitting element, and

a light-shielding film is formed on the bank layer.

14. A display device as claimed in one of claims 11 to 13, wherein
the display device further comprises

a pixel electrode that is arranged below a light-emitting layer of the light-
5 emitting element and that connects to the drive thin-film transistor, and

a common electrode that is arranged so as to face the pixel electrode with the
light-emitting layer interposed in between and that covers the bank layer, and
the light-shielding film is formed by the common electrode.

10 15. A display device as claimed in one of claims 1 to 13,
wherein the drive thin-film transistor and the control thin-film transistor are of an n-
channel type.

16. A display device as claimed in one of claims 1 to 13,
15 wherein the drive thin-film transistor and the control thin-film transistor are of a p-
channel type.

17. A display device as claimed in one of claims 1 to 13,
wherein the light-emitting element is of an organic electroluminescence type.